

AD-A276 617



2

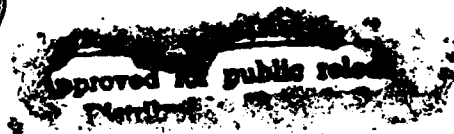
1993  
Executive Research Project  
RS14

# Materiel Management Challenges During the Persian Gulf War

Lieutenant Colonel  
Glenn M. Melton  
U.S. Army

DTIC  
ELECTE  
MAR 08 1994  
S E D

*Faculty Research Advisor*  
Dr. Rita Wells



The Industrial College of the Armed Forces  
National Defense University  
Fort McNair, Washington, D.C. 20319-6000

DTIC QUALITY INSPECTED 5

94-07543



94

3

7

105

**Best  
Available  
Copy**

# REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION Unclassified			1b. RESTRICTIVE MARKINGS		
2a. SECURITY CLASSIFICATION AUTHORITY N/A			3. DISTRIBUTION / AVAILABILITY OF REPORT Distribution Statement A: Approved for public release; distribution is unlimited.		
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE N/A					
4. PERFORMING ORGANIZATION REPORT NUMBER(S) NDU-ICAF-93- R 814			5. MONITORING ORGANIZATION REPORT NUMBER(S) Same		
6a. NAME OF PERFORMING ORGANIZATION Industrial College of the Armed Forces		6b. OFFICE SYMBOL (If applicable) ICAF-FAP	7a. NAME OF MONITORING ORGANIZATION National Defense University		
6c. ADDRESS (City, State, and ZIP Code) Fort Lesley J. McNair Washington, D.C. 20319-6000			7b. ADDRESS (City, State, and ZIP Code) Fort Lesley J. McNair Washington, D.C. 20319-6000		
8a. NAME OF FUNDING / SPONSORING ORGANIZATION		8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER		
8c. ADDRESS (City, State, and ZIP Code)			10. SOURCE OF FUNDING NUMBERS		
			PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO.
11. TITLE (Include Security Classification) <i>Material Management Challenges During the Persian Gulf War</i>					
12. PERSONAL AUTHOR(S) <i>Glenn melton</i>					
13a. TYPE OF REPORT Research		13b. TIME COVERED FROM <u>Aug 92</u> to <u>Apr 93</u>		14. DATE OF REPORT (Year, Month, Day) April 1993	
				15. PAGE COUNT 37	
16. SUPPLEMENTARY NOTATION					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUB-GROUP			
19. ABSTRACT (Continue on reverse if necessary and identify by block number)  SEE ATTACHED					
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input checked="" type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION Unclassified		
22a. NAME OF RESPONSIBLE INDIVIDUAL Judy Clark			22b. TELEPHONE (Include Area Code) (202) 475-1889		22c. OFFICE SYMBOL ICAF-FAP

## ABSTRACT

AUTHOR: Glenn M. Melton, LTC, US ARMY  
TITLE: Materiel Management Challenges During the Persian Gulf War  
FORMAT: Individual Study Project  
DATE: 12 April 1993 PAGES: 25  
CLASSIFICATION: Unclassified

Logistics support of Operations Desert Shield and Desert Storm has been categorized as an overwhelming success. Vast quantities of supplies were moved, force modernization of equipment was implemented, and incorporation of reserve component units was accomplished. Logistics units were tasked to overcome unforeseen challenges with resilience and innovation. This paper examines the problems, and solutions, associated with providing Class II (specifically uniforms), Class VII (tactical wheeled vehicles), and Class IX (automotive repair parts) to deployed units. Particular focus is placed on the activities of materiel management centers. General Accounting Office observations, after action reports, criminal investigation documents, and published articles provide the basis for the paper.

**1993  
Executive Research Project  
RS14**

# **Materiel Management Challenges During the Persian Gulf War**

**Lieutenant Colonel  
Glenn M. Melton  
U.S. Army**

*Faculty Research Advisor*  
**Dr. Rita Wells**



**The Industrial College of the Armed Forces  
National Defense University  
Fort McNair, Washington, D.C. 20319-6000**

## DISCLAIMER

This research report represents the views of the author and does not necessarily reflect the official opinion of the Industrial College of the Armed Forces, the National Defense University, or the Department of Defense.

This document is the property of the United States Government and is not to be reproduced in whole or in part for distribution outside the federal executive branch without permission of the Director of Research and Publications, Industrial College of the Armed Forces, Fort Lesley J. McNair, Washington, D.C. 20319-6000.

Accession For	
NTIS	CRA&I <input checked="" type="checkbox"/>
DTIC	TAB <input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification .....	
By .....	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
A-1	

## INTRODUCTION

Although maintaining logistics momentum and flexibility are doctrinal hallmarks of logistics units, seldom are they achieved without overcoming major obstacles. Support efforts during Operations Desert Shield/Storm clearly proved that axiom. Innovation, agility, and responsiveness were constantly required at all levels to overcome extended distances, crowded ports, increasing demands, and competing priorities. When doctrine could not be applied, alternatives were developed. When automation was ineffective, manual procedures were applied. When units were not available, "ad hoc" support elements were created. The most celebrated was the Central Command (CENTCOM) logistics headquarters, "established in lieu of mobilizing a theater level command and control logistics headquarters."<sup>1</sup> The end result -- an overwhelming success for the United States.

Despite the military's well documented success, not all "fixes" will be blueprints for supporting future operations. Mistakes were made; logistics bottlenecks materialized; and, costly lessons were learned. This case study focuses on the inland materiel management of desert camouflage uniforms (DCUs), automotive repair parts, and selected tactical wheeled vehicles during three phases of the Army's deployment to Saudi Arabia: the in-theater build-up; combat operations; and redeployment. The analysis will examine:

- o units and procedures utilized to assume accountability for, and distribution of, selected assets arriving at the theater's aerial and sea ports of debarkation;
- o methodologies used to overcome asset shortfalls and prioritize equipment issues;
- o problems encountered with equipment turn-in during the redeployment;
- o lessons learned and recommendations for doctrinal changes.

#### WHY FOCUS ON UNIFORMS?

Desert camouflage uniforms (DCUs) became one of the most intensively managed supply items in the theater. Critically short from the outset, DCUs became essential to the morale of the troops. The General Accounting Office (GAO) reported:

Army and Marine Corps officials told us that wearing the desert camouflage uniform was a positive morale factor. The soldiers wanted to be part of the team, and wearing the desert camouflage uniform created troop camaraderie. <sup>2</sup>

Problems in quickly obtaining enough DCUs were inevitable: large quantities were not stored in war reserve stocks and industrial surge did not yield major results prior to troop deployments. Additionally, the Department of Defense (DOD) did not know the total uniform requirement during the initial planning phases. Furthermore, an in-theater logistics organization (the 321st Theater Army Materiel Management Center) capable of providing centralized management of requirements assets did not



arrive in Saudi Arabia until November.

The Army's Common Table of Allowance 50-900 requires personnel in Army units to deploy with two camouflage uniforms. Most active Army units based in the United States (primarily the XVIII Airborne Corps) deployed with two sets of camouflage uniforms - and a few deployed with one set. Soldiers based in Europe (primarily the VII Corps) and late arriving reservists were told they would receive DCUs in Saudi Arabia.

#### The Proper Fit

Concurrent with its deployment in August, the 1st Corps Support Command (1st COSCOM) began obtaining and shipping available stocks from Fort Bragg. Units deploying from Forts Stewart and Hood also ensured stocks arriving from industrial base were forwarded. Once in Saudi Arabia, the COSCOM began making those assets immediately available in theater to further offset existing shortages. Since initial quantities on hand were limited, "the Corps G-4's policy was to issue uniforms to individuals who deployed with one set or no camouflage uniforms."<sup>3</sup>

The chronic challenge confronting the 1st COSCOM (and later the 2nd COSCOM) was obtaining the proper sizes for distribution. The problem was clearly visible - industry produced uniforms based on "tariff sizes"; however, the existing troop population required a different size mix. Army Supply Bulletin 10-523 (Size Tariff for Clothing, Equipment, and Footwear) defines "tariff sizes" as

"sizes for which the frequency of issue justifies procurement for stockage within the supply system."<sup>4</sup> The 1st COSCOM's management efforts were further compounded by the fact that Sd 10-523 lists 22 DCU coat (shirt) and 21 DCU trouser sizes and issue quantity combinations. The extract below<sup>5</sup> delineates the per/1,000 distribution plan for sizes "medium" coats and trousers:

<u>COATS</u>		<u>TROUSERS</u>	
SIZE	QUANTITY	SIZE	QUANTITY
MED-XXSHT	15	MED-XSHT	6
MED-XSHT	27	MED-SHT	141
MED-SHT	90	MED-REG	122
MED-REG	264	MED-LNG	126
MED-LNG	101		
MED-XLNG	12		

Although improperly fitting uniforms did not reduce combat readiness, several distractions resulted:

- o troop morale suffered and command involvement increased when uniforms could not be quickly exchanged;
- o soldiers forced to wear uniforms too small for them faced additional hygiene problems caused by the desert heat and dust;
- o confidence in the supply system waned as other clothing shortages (especially underwear) materialized.

XVIII Airborne Corps command involvement caused stateside logisticians to relook the utility of the existing tariff and expedite the shipment of additional uniforms. As the theater received additional uniforms, the 1st COSCOM experienced little difficulty obtaining them: "With only one Corps in theater (XVIII Abn Corps) the availability of supplies from theater flowed smoothly."<sup>6</sup> 1st

COSCOM coordinated uniform exchanges when existing inventories permitted; but the exchanges created another problem - excess uniforms in unwanted sizes. Supply units were forced to store and account for the excesses until turn-in to theater support units was possible.

The problem of obtaining and distributing proper sizes was never totally resolved by the 1st COSCOM, the 2nd COSCOM, or the Army. The disconnect between the existing tariff and military population was, however, recognized by GAO and included in its report to Congress:

In addition to a lack of desert uniforms and boots, the services had clothing sizing problems. Supply officials told us that the distribution of sizes of uniforms was not representative of the military population as a whole. However, because the range of clothing sizes needed to equip troops in Saudi Arabia was different from the standard distribution used to order and stock clothing, there were not enough of certain sizes.<sup>7</sup>

#### VII Corps' Picture

The VII Corps knew it would not receive desert camouflage uniforms prior to deployment. The departure timetable was too prohibitive, and the shortage of uniforms was understood. Nevertheless, the United States Army Europe's (USAREUR's) Office of the Deputy Chief of Staff for Logistics (ODCSLOG) and the 200th Theater Army Materiel Management Center (TAMMC) began coordination to ship DCUs stored in war reserve to Saudi Arabia. The Corps G-4 disseminated a message in November to deploying units delineating the priority of issue for uniforms. The message did

not, however, include reserve or Continental United States (CONUS) based units expected to join the Corps in Saudi Arabia.

#### Quick Action - Bad Results

Initially, issues to VII Corps units were fragmented. The first shipments from Germany arrived and were shipped to Logistics Base Alpha in mid December ahead of the supply company charged with receipt, storage, and issue of these supplies. Unfortunately, documentation identifying quantities were missing, boxes were opened, uniforms were missing, and Log Base Alpha was not fully operational. To minimize further pilferage, weather damage, and unprogrammed requirements to guard the uniforms, inventories were conducted and documented manually by 800th Materiel Management Center (MMC). Issuing uniforms quickly to forward deployed units at the top of the Corps' prioritized issue list came next:

Initially, issues were supervised on site by the 800th CMMC to expedite the movement and issue of the DCUs. . . Records of issues were passed to the 800th CMMC for posting. The automated system was not functioning; thus, the 800th CMMC had to resort to manual accounting.<sup>e</sup>

By late December the general supply company charged with issuing uniforms was operational; however, additional problems began surfacing immediately:

- o Unit supply personnel accepted what was available, but different quantities of shirts, trousers, and hats limited the issue of complete uniforms in desired quantities.
- o A lack of popular sizes further limited the utility of available stocks.

- o Commanders quickly became concerned over the limited and mixed quantities, as well as limited sizes, and began pressuring the MMC to identify when adequate assets were expected.
- o Accountability became extremely sensitive as the gap between what USAREUR asserted what was shipped, and what could be accounted for at Log Base Alpha grew larger. The 6th Military Police Detachment began a criminal investigation to determine the cause of the accountability disconnect.

VII Corps moved its assets from Log Base Alpha to Log Base Echo in late January, and on hand accountability improved significantly. DCUs were stored in a secure area with controlled access; a complete inventory and records reconciliation was conducted; a forward support team (supervised by a senior supply warrant officer) was established near the storage/issue site to validate quantities issued to units; and issues to units were made based on guidance from the 800th MMC. Total asset accountability still remained a problem, primarily because of a lack of receipt documents:

Additional investigation into the system used by the 800th CMMC to account for DCUs arriving in the Corps AOR revealed that few inventory documents arrived with shipments into the Corps. . . Any shortages in the shipment would go undetected as it was unknown what was in the shipment at the point of origin."

#### After the Storm

A substantial increase in uniform availability occurred shortly after the ground war ended. Increased availability also created renewed pressure to issue the uniforms. Once again, morale was the key factor. Commanders wanted to make sure that victorious

soldiers did not return home without desert camouflage uniforms. The 321st assumed control of arriving assets, and each corps was tasked to identify the number of uniforms still needed to ensure:

- o two properly fitting sets were available to satisfy initial issue requirements;
- o replacements were available for lost, damaged, or destroyed uniforms; and,
- o assets were available to permit exchanges for improperly fitting uniforms previously issued.

Criminal investigations into allegations of theft and improper supply procedures continued, command interest grew, and management intensified. Daily briefings on the shipment, receipt, and issue of uniforms were conducted from divisional level to theater level. In some cases, commanders supervised their units picking up uniforms. Unfortunately, accountability problems persisted. Shipping procedures from the theater to the corps were identified by military police investigators as the key problem:

The 321st MMC (Fwd) at KKMC stated that DCUs were a priority item for shipment to the Corps. DCUs arriving in SWA were transported by truck to Corps supply activities. In the interest of time, most shipments were sent without any paperwork accompanying the trucks.<sup>10</sup>

Command interest, intensive management, and uniform distribution continued until most troops redeployed home. As late as April, general officer guidance was still being disseminated to ensure soldiers boarding homeward bound aircraft had complete uniforms. Did everyone ultimately receive their authorized quantities of uniforms? No!

## WHERE ARE THE REPAIR PARTS?

"The Army did not have systemwide visibility over its assets."

General Accounting Office<sup>11</sup>

Commanders and logistics planners at every level recognized the direct relationship between maintenance readiness/sustainment and combat readiness. The Army Materiel Command's (AMC) Logistics Assistance Officers (LAOs) arrived in Dhahran on 20 1990 August to streamline requisitioning procedures between the 22nd Support Command and the wholesale system. Surges in maintenance repairs, and submission of additional requests for repair parts (including engines, transmissions, generators, and power packs) preceded both the XVIII Airborne Corps' and VII Corps' deployments. Despite the most earnest efforts to keep them from materializing, shortages and problems in distributing and managing repair parts arose. One of the major causes was recently highlighted by Lieutenant General William Pagonis, 22d Support Command's commanding general from August 1990 to January 1992:

Because of the simultaneous deployment of combat and combat service support forces, theater materiel management assets were not deployed early. As a result, automated recordkeeping of items in the theater was not accurate and timely. It was hard to update automated records with time sensitive arrivals and departures. Class IX repair parts suffered from the same accountability lag.<sup>12</sup>

A number of other factors also complicated efforts to effectively maintain visibility of, and quickly distribute, repair parts. Among them:

- o worldwide shortages existed for some items;
- o major units deployed substantially ahead of their support units and sustainment stocks;
- o later arriving sustainment stocks were misrouted, lost, delayed, or in some cases -- not delivered;
- o National Guard and Reserve maintenance units deployed without Authorized Stockage Lists (ASLs);
- o increased training tempo increased equipment breakdown and consumption of available assets; and
- o initially, centralized visibility and distribution management did not exist.

Among the causes listed, none presented a greater - and potentially more costly - challenge than overcoming the lack of visibility and establishing centralized management.

#### Early "Fixes"

Facing known parts shortages, vehicle breakdowns, and uncertain requirements, arriving units developed numerous (and sometimes questionable) procedures to obtain major assemblies and other supplies. The XVIII ABN Corps' 1st COSCOM, the first major logistics command to face the negative impacts of poor asset visibility reported to GAO:

Some combat units arriving in theater and preparing to deploy to forward-operating locations obtained equipment and supplies and departed before logistics personnel could record their receipt of the assets into the supply system.<sup>13</sup>

To establish some degree of visibility at the sea port of debarkation (SPOD), the 1st COSCOM ". . . had to keep personnel at the port so that when cargo arrived they could determine where



where the cargo was to go and what was in the containers."<sup>14</sup> At the aerial port of debarkation (APOD) soldiers from an early arriving cargo transfer company were combined with a Class I (subsistence) platoon to form an Airfield Departure/Arrival Control Group (ADACG). Initially responsible for expediting the reception of personnel, the ADACG also identified the corps' repair parts arriving on air line of communications (ALOC) pallets, and ensured their forward movement to direct support units.

AMC's Logistics Assistance Officers (LAOs) took another approach.

Using laptop computers:

Requisitions were sent from the LAO in Dhahran to the appropriate inventory control points in the United States. . . The requisitions were promptly filled and the parts transported on air line of communication Air Force cargo aircraft to Dhahran, where an expedited system moved the parts to the point of need.<sup>15</sup>

AMC, using civilian and military volunteers from CONUS, also established a theater level support activity in Dammam. The Army Support Group (ASG), a provisional organization, started operations on 6 November and provided "theater level maintenance, supply, and retrograde sustainment to deployed forces."<sup>16</sup> Its parts came in packages developed by CONUS depots and were designed to serve as a 60-day initial stock until formal supply accounts could be created.

With only one corps and a few echelon above corps units in the theater, these approaches did produce limited results.

In November, two key logistics organizations arrived from CONUS, the 321st TAMMC (doctrinally capable of providing centralized materiel management for the theater); and the 988th Repair Parts Supply Company (General Support). The 988th deployed to provide repair parts support to echelons-above-corps units, but it also deployed without its authorized stockage list (ASL) and could not issue parts to customers in the theater. The 321st requisitioned a replacement ASL, but the parts were slow in arriving. In an article written for Army Logistician, Major Paul Bacon, Commander of the 988th during Desert Shield/Storm, wrote:

To compound the problem, the system for distributing the limited class IX to the units in Saudi Arabia had not been established. A significant amount of frustrated cargo resulted. . . The 998th filled a significant void by serving as a central point for receiving these parts, processing them, and working with the MMC to route them to units. Parts that could not be routed were stocked in the 988th's ASL for distribution as needed.<sup>17</sup>

Fortunately for the theater, a system - albeit fragile - was established. More critically, it was operational when the VII Corps began arriving in December. According to Major Bacon, "The 22d Support Command (SUPCOM) decided to establish the unit's operation as the major class IX site for Operation Desert Storm."<sup>18</sup> The 321st MMC also established operations at the 988th's site to provide theater level management of the parts.

#### Competition and Multiple Requisitions

As the probability of ground combat increased, the dramatic rise in demands for repair parts caused a number of problems.

2d COSCOM's Major Charlotte Kimball (Chief, Maintenance Division, Assistant Chief of Staff, Materiel) recently wrote, "We suffered a significant breakdown in the repair parts distribution system throughout the theater. There were numerous contributing factors ranging from systemic to human error."<sup>19</sup> Despite parts shortages and frustration resulting from poor asset visibility, commanders increased their focus on equipment readiness. And the soldiers responded, most of the time with good intentions. Competition between major units, however, became more aggressive, and cooperation - at times - disappeared. "People at every level from the Army Materiel Command to the unit motorpool were taking extraordinary measures to get repair parts into the hands of the wrench turners."<sup>20</sup>

Not all extraordinary measures produced positive results. In some cases, unit maintenance personnel sent soldiers out to search storage sites and direct support units to locate, and expedite the release of, repair parts. The results often created friction and caused excesses to materialize:

On numerous occasions the various levels of parts chasers ended up at the same place looking for the same parts. On some occasions all parties were successful in obtaining their parts and showing up only to find out there were two other engines or transmissions for the same vehicle.<sup>21</sup>

In other cases, requirements were overstated. 1st COSCOM's After Action Report also succinctly addressed this problem:

Since there so many sources of supply, there were multiple requisitions in the system for the same

requirement (sometimes from the same organization)  
. . . There were so many requisitions with excessive quantities that the NICP started to cancel them indiscriminately. The MMC was not always notified of the cancellations; this caused a management problem. Although some high quantities were justified (M915 engines), most were legitimate concerns by the NICP.<sup>22</sup>

The Materiel Management Centers, in response to the National Inventory Control Points, began screening - and cancelling - both requisitions with potentially excessive quantities and multiple requests for the same item (from the same unit). Automated reports were used to identify possible violators, and commanders were asked to justify questionable requisitions. Those not justified were cancelled. The MMCs were only partially successful and supplies some were shipped, arrived unexpectedly at the wrong support units and became frustrated:

It became a vicious cycle as units generated multiple requisitions for the same requirements and materiel arrived at Supply Support Activities (SSAs) which no longer supported the unit for which the materiel was destined.<sup>23</sup>

#### Centralized Management at King Khalid Military City (KKMC)

In January, theater level centralized management of repair parts was established at Log Base Bravo near KKMC. The 988th was the focal point, providing 24-hour to customers. The repair parts company used manual stock record accounts to record transactions; and updated the 321st MMC's automated data base after the fact. Several shortfalls, including theater-wide frustration with the automated system, resulted in growing use of manual procedures:

Intensive management of Class IX major assemblies was most effective when managed offline. The echelon above corps repair parts company operated manually, ARCENT centrally managed distribution, and transportation requirements were frequently identified spontaneously. Most requests were extremely time sensitive and automated SAILS could not have been modified quickly or frequently enough to be responsive.<sup>24</sup>

The 22 SUPCOM provided a team to examine customer requests, monitor asset availability, and establish priority of issue when conflicts arose. AMC's Army Support Group provided personnel to assist with daily reparable major assembly retrograde operations. Both corps materiel management centers sent customer assistance teams to the 321st MMC's forward site at KKMC to: handle request from major subordinate commands; coordinate asset redistribution between the corps; and monitor unserviceable and excess parts retrograde. Finally, a second aerial port of debarkation was established at KKMC to expedite the forward movement of supplies and parts.

Major assemblies were the automotive repair parts receiving the most intensive management. Units were required "to provide DA Form 2406 (Material Condition Status Report) as justification"<sup>25</sup> to obtain parts. The requests began at the direct support unit, which submitted its requirements to the divisional materiel management center (DMMC). The DMMC commander, or his representative, forwarded consolidated lists of unfilled requisitions (with the DA Forms 2406) to the corps MMC. There, the readiness officer

either:

- o filled the requirement from corps stocks;
- o coordinated the release of the item from the 988th; or
- o programmed future fill when assets became available.

Documentation for retrograding unserviceable items were also processed through the materiel management centers to the 988th.

Critical items lists and zero balance lists were developed, updated, and included in daily readiness briefings to the SUPCOM, COSCOM, and Corps commanders. The briefings helped ensure abuses were minimized, equity in distributing assets was maintained, and problems were addressed.

The manual procedures used were frequently slow, manpower intensive and sometimes inaccurate. Nevertheless, the 988th remained customer oriented in supporting the two corps. More notable, its support enabled VII Corps to receive and issue over 327 major assemblies during the final two days before the ground war started.

#### Retrograde Operations

Within days following the cease-fire, the materiel management centers began taking actions to turn off the logistics pipeline from CONUS. First, cancellations were submitted for requisitions no longer need and not already shipped. Next, active army units were queried to determine when their Department of Defense Activity Address Code (DODAAC) - mailing address for requisitions -

needed to be switched to CONUS or European locations. The centers then began coordinating the termination of requisitioning accounts for National Guard and reserve units.

AMC's Area Support Group, with 988th's assistance, established the Saudi Arabian Retrograde and Redistribution Facility (SARRF) at King Khalid Military City. Initially tasked to retrograde unserviceable reparable major assemblies, the facility ultimately handled all general supplies. LTC Hank Duarte (Director of Supply for the Support Group) supervised the implementation of an innovative automated pre-screen process which provided disposition instructions for an item in less than a minute. Using Letterkenny Army Depot's mainframe and a satellite data link :

A terminal operator used a unit's turn-in document . . . to input data into the system. The pre-screen acknowledged receipt of the input; searched its lists of NSN's for a match; and signaled a printer at the SARRF to generate a materiel release order that routed the item to a repair or storage activity.<sup>26</sup>

This system gave LTC Duarte's personnel disposition instructions in less than a minute, whereas the Army's field returns system takes from two to six months.

As unit departures began, late arriving ALOC pallets, frustrated containers, and unit excesses were forwarded to the SARRF. LTC Duarte reported, "It was not unusual for 50 to 100 trucks with both serviceable and unserviceable materiel to show up in a day."<sup>27</sup> The SARRF remained operational until December 1991. By that time, an ad hoc organization - using new procedures - had

returned over \$1.75 billion worth of materiel to the supply system.™

#### WHAT ABOUT TACTICAL WHEELED VEHICLES?

Desert Shield/Storm forced the Army to overcome one of its most acute equipment shortfalls - trucks. Chronic problems (obsolete fleets, unit shortages, and mixed fleets), combined with new operational requirements (vast distances, limited roads, heavy equipment transport (HET) requirements, and tactical mobility) resulted in involvement from the Secretary of Defense down. DA's Office of the Deputy Chief of Staff for Operations (ODCSOPS) and Office of the Chief of Staff for Logistics (ODCSLOG) initially focused on resolving historical shortages and replacing obsolete fleets. Army, Central Command (ARCENT) identified and prioritized new requirements; and obtained host nation support to compensate for its most immediate shortfalls. The goal was simple: get trucks to the units. The tasks were more complexed: concurrent with combat preparations, conduct both in-theater fielding of new systems, and vehicle exchanges (swap-outs). The goal was met, but not without costs.

#### Heavy Equipment Transports

To establish any system of inland transportation for combat units, the problem of inadequate quantities of HETs had to be solved quickly. The impact of the shortfall was understood



in both Riyadh and Washington:

Although the Army was the designated theater manager for surface transportation, it could not fulfill that role because it lacked the transportation assets to meet its own requirements. . . it had only 112 heavy equipment transports to move equipment and personnel carriers to forward locations.<sup>29</sup>

In response to the Secretary of Defense's question, "Were there enough HETs in theater?", the Army's ODCSOPS responded, "The ARCENT campaign plan established a 1,295 HET requirement, double the Army inventory of HETs."<sup>30</sup> While ARCENT's contracting officers negotiated contracts with the Saudi government for trucks and drivers, the Joint Staff and the Army's ODCSOPS conducted a world wide search for HETS. The combined efforts of ARCENT and the Joint Staff/DA ODCSOPS search produced 1,404 total HETs from the following sources:

- 497 US Military
- 60 Italy - donation
- 100 Egypt - vehicles with drivers
- 192 Germany - donation
- 40 Czechoslovakia - procured
- 134 US trucking industry - leased
- 48 US trucking industry - procured
- 333 Saudi Arabia (Host Nation Support)<sup>31</sup>

ARCENT established the priority of issue of HETs to units, and the 22nd SUPCOM closely monitored the use of transportation units to ensure inland movement timetables were met.

High Mobility Multipurpose Wheeled Vehicles (HMMWVs) and Heavy Expanded Mobility Tactical Trucks (HEMTTs)

Henry Eccles, in Logistics in the National Defense, described several negative results of logistics momentum when synchronization

of effort is absent:

Another example of momentum is found in the manner in which an inadequate system of planning and controlling the allocation and movement of shipping. . . results in a pile-up of shipping in the overseas ports. This snowballs because there is an immediate resort to "selective unloading." This in turn reduces the efficiency of the unloading process; and this in turn causes further congestion.<sup>32</sup>

Combined with both the continued arrival of VII Corps' equipment and sustainment stocks from CONUS and Europe, the shipment and issue of 5,032 HMMWVs and 1,481 HEMTTs created a bottleneck which nearly suffocated all other port activity. Poor asset visibility limited the theater's ability to quickly identify quantities in a shipment, and who the intended recipient was:

Force modernization initiatives (HMMWV fielding, HEMMT fielding, Bradley and M1A1 Tank upgrade) caused massive quantities of equipment to arrive in theater not shipped to a consignee. Quantities involved were at times unclear; assets arrived at both ports; secure facilities were unavailable; and basis of issue plans (BOIPs) were absent.<sup>33</sup>

As a result, units charged with distributing these vehicles were frequently not aware that the assets were in the country!

Once notified, they were forced to:

- o locate and assume accountability for assets often spread throughout crowded port facilities;
- o ensure pilferage and stripping (unauthorized removal of parts) did not occur;
- o quickly prepare, then issue, vehicles according to basis of issue plans.

In coordination with the ARCENT J-4, the responsibility for the initial issue of vehicles fell on a provisional organization

from CONUS and elements of a Europe based activity familiar with equipment distribution. Operating near the sea port in Dammam, they were:

- o AMC's Army Support Group, previously mentioned, "The Support Group was pieced together, using teams of civilians from the various depots."<sup>34</sup> The group issued the equipment at the ports.
- o Combat Equipment Group, Europe (CEGE) representatives were responsible for assisting in identifying equipment arriving from Europe; identifying replacement assets available in Europe; and providing technical support to AMC's Support Group.

The 2nd MMC (XVIII ABN Corps) and 800th MMC (VII Corps) were responsible for subsequent issues to corps units. Both MMCs used their port operations detachments (originally tasked to identify ALOC pallets and containerized sustainment stocks for forward movement). Since two major elements of the XVIII Abn Corps (82nd Airborne Division and 1st Infantry Division) deployed with "pure fleets" of HMMWVs, the majority of the in-theater activity involved VII Corps units, and the 800th MMC's port operations detachment.

#### VII Corps' Approach

The Basis of Issue Plans (BOIPs) were developed and managed by the Corps G-4. Copies were furnished to each major subordinate command and the 800th MMC. Changes in issue quantities or priority were coordinated directly between the MMC and the G-4. The G-4 then provided updates to the Corps commander and incorporated his guidance into subsequent BOIPs.

The 800th conducted telephonic coordination with its port detachment twice daily. In the morning, confirmation of the day's planned transactions occurred: priority of issues to units; quantities involved; the issue method (straight issue or vehicle direct exchange); and the location (Dammam or Log Base Echo). Since most units were more than 325 miles forward of Dammam, Log Base Echo was the preferred site. The afternoon update reviewed the day's transactions; outlined problems or additional coordination requirements involving forward deployed units; and identified convoy movement data. The MMC then obtained input from the 13th Supply and Service Battalion (responsible for vehicle receipts and issues at Log Base Echo) and apprised them of additional vehicle receipts. The MMC's data base was updated, and statistics were prepared for use at evening briefings to the 2d COSCOM Commander and the VII Corps staff.

The captain supervising the port operations detachment became responsible for:

- o direct coordination with the ARCENT staff to determine which, and how many, vehicles were appropriated to VII Corps;
- o coordination with the terminal operations personnel to establish accountability, obtain storage space, and provide security for the vehicles;
- o arranging convoys to move vehicles to Log Base Echo;
- o receiving, storing, and turning in vehicles acquired as a result of direct exchanges; and,
- o ensuring the telephonic coordination with the MMC occurred.

Once the vehicles were offloaded, the detachment conducted serial number inventories to establish accountability, and used a computerized spreadsheet (developed by one of the noncommissioned officers) to maintain asset visibility. Independent searches were initiated to obtain visibility and accountability for mis-routed or abandoned vehicles. When theft or unauthorized cannibalization was evident, criminal investigators were notified and formal investigations were conducted.

This system relied heavily on the detachment's resourcefulness and ability to operate independently, and the theater benefited. During the final logistics surge before the ground war, the detachment changed its procedures for sending vehicles forward for issue or for use as battle loss replacements. Instead of sending empty trucks forward, HMMWV and HEMTT cargo trucks were sent to either the APOD to be loaded with repair parts, or to a ammunition supply point to be loaded with ammunition. HEMTT fuelers were sent to petroleum points and filled. The procedure continued after the ground war began and produced extraordinary results:

Class VII shipments from the Port of Dammam continued to be pushed to the Corps Tactical Assembly Area. Of primary impact was the shipment of HEMTT cargo trucks uploaded with Class V (ammunition ) assets and HEMTT fuelers which were completely topped off and immediately sent forward of the line of departure to units in contact with the enemy.<sup>35</sup>

The port detachment issued over 4,360 vehicles and trailers during the February - March timeframe. Included were 2,794 HMMWVs

and 697 HEMTTs. The port detachment was not the doctrinal solution, but it was an effective solution.

## CONCLUSION

Materiel managers overcame a number of gargantuan obstacles during the Persian Gulf War; nevertheless, the mistakes, positive efforts exerted, and lessons learned revealed dangerous deficiencies in doctrine and procedures. A number of corrective actions are underway; however, among the most critical is the establishment and resourcing of automation and procedures which provide materiel managers with total asset visibility. This capability must include accurate visibility of sustainment stocks arriving at aerial and sea ports of debarkation. It did not exist in Saudi Arabia and the Army suffered needless delays and frustration. Furthermore, an over reliance on manual procedures will limit logistics synchronization of effort and cause a distorted view of a commander's combat sustainment capability.

On the other hand, the Army Materiel Command's use of civilians to establish a maintenance repair facility in Dammam and the Saudi Arabian Retrograde and Redistribution Facility were initiatives with future application potential.

In an era of diminishing resources, maintaining logistics momentum and flexibility will become more critical to operational success. Every effort must be made to minimize the

costs of support operations. It is highly unlikely that the "brute force logistics" (a phrase used by LTG Frederick Franks, CDR, VII Corps)<sup>36</sup> available for Desert Storm will be available in future conflicts. What must be available are the hallmarks of logistics support -- momentum and flexibility. Then, and only then, will logistics be a combat multiplier.

## ENDNOTES

1 Department of Defense, Conduct of the Persian Gulf Conflict: An Interim Report to Congress, Washington: GPO, July 1991, p. 7-3.

2 United States General Accounting Office, Desert Shield/Storm Logistics Observations by U.S. Military Personnel, Washington: GPO, November 1991, p. 41.

3 1st Corps Support Command After Action Report, Fort Bragg, Undated, p. 5-3.

4 United States Army Supply Bulletin 10-523, Size Tariff for Clothing, Equipment, and Footwear. Washington: GPO, 1 June 92, p. 2-1.

5 Ibid, pp 9 & 36.

6 1st Corps Support Command After Action Report, p. 5-3.

7 United States General Accounting Office, Desert Shield/Storm Logistics Observations by U.S. Military Personnel, p. 42.

8 6th Military Police Detachment, "7th Corps' Desert Camouflage Uniforms (DCUs) in Theater," Saudi Arabia, 15 April 1991, p. 6.

9 Ibid, p. 5.



## ENDNOTES

10 Ibid, p. 4

11 United States General Accounting Office, Desert Shield/Storm Logistics Observations by U.S. Military Personnel. p. 30.

12 William G. Pagonis and Michael Krause, "Observations on Gulf War Logistics," Army Logistician. September-October 1992, p. 8.

13 United States General Accounting Office, Operation Desert Storm: Transportation and Distribution of Equipment and Supplies in Southwest Asia. Washington: GPO, December 1991, p. 8.

14 United States General Accounting Office, Desert Shield/Storm Logistics Observations by U.S. Military Personnel, p. 30.

15 John Carr, "Starting From Scratch in Saudi Arabia," Army Logistician, January-February 1993, p. 7.

16 Keith Mostofi, "Sustainment Maintenance in Southwest Asia," Ordnance, February 1992, p. 10.

17 Paul Bacon, "Repair Parts to the Rescue," Army Logistician. January-February 1993, p. 11.

18 Ibid, p. 11.

## ENDNOTES

19 Charlotte E. Kimball, "Maintenance During the Gulf War - A Piece of the Story." Ordinance, February 1992, p. 9.

20 Ibid, p. 9.

21 1st Corps Support Command After Action Report, p. 11-13.

22 Ibid, p. 11-12.

23 Greg R. Gustafong, "Logistics Management Systems in Desert Shield/Desert Storm: How Well Did They Do?" U.S. Army War College, 7 April 1992, p. 9.

24 800th Materiel Management Center. "Battle Chronology," Saudi Arabia, 10 April 1991, p. 3.

25 Bacon, p. 12.

26 Hank Duarte, "Desert Returns," Army Logistician, July-August 1992, p. 36.

27 Ibid, p. 36.

28 Ibid, p. 37.

29 United States General Accounting Office, Transportation Distribution of Equipment and Supplies in Southwest Asia. p. 4.

## ENDNOTES

30 Headquarters, Department of the Army, Office of the Deputy Chief of Staff for Operations, "Heavy Equipment Transporters (HETs) in Theater," Washington, 18 June 1991, p. 1.

31 Headquarters, Department of the Army, Office of the Deputy Chief of Staff for Operations, "Performance of Tactical Wheeled Vehicles in Operation Desert Storm." Washington, Undated, p. 5.

32 Henry Eccles, Logistics in the National Defense (Harrisburg: The Stackpole Company, 1959), p. 127.

33 United States Army Quartermaster School. "Operation Desert Shield/Storm Observations - Action Plan," Fort Lee, Undated, p. 37.

34 Harry G. Karegeannes and William Martinous, "Supporting Power Projection," Army Logistician, July-August 1992, p. 19.

35 800th Materiel Management Center, "Battle Chronology." p. 2.

36 Peter S. Kindavatter, "VII Corps in the Gulf War: Post Cease Fire Operations," Military Review, June 1992, p. 15.

## APPENDIX

AMC - Army Materiel Command

ASL - Authorized Stockage List

APOD - Aerial Port of Debarkation

ARCENT - Army Forces, Central Command

ASG - Army Support Group

BOIP - Basis of Issue Plan

CENTCOM - United States Central Command

Class II - Clothing and uniform items

Class VII - Major items of equipment, including wheeled vehicles

Class IX - Repair Parts

CONUS - Continental United States

Corps G-4 - Corps staff element primarily responsible for planning supply, service, and maintenance support; and implementing force modernization initiatives.

COSCOM - Corps Support Command

DCU - Desert Camouflage Uniform

DLA - Defense Logistics Agency

DMMC - Division Materiel Management Center

DODAAC - Department of Defense Activity Address Code

HEMTT - Heavy Expanded Mobility Tactical Truck

HET - Heavy Equipment Transport

HMMWV - High Mobility Multipurpose Wheeled Vehicle

GAO - General Accounting Office

LAO - Logistics Assistance Officer

NICP - National Inventory Control Point

## APPENDIX

SPOD - Sea Port of Debarkation

SSA - Supply Support Activity

1st COSCOM - XVIII Airborne Corps' support command.

2nd COSCOM - VII Corps' support command.

2nd MMC - 2nd Materiel Management Center: assigned to 2nd COSCOM, and missioned to support XVIII Abn Corps units.

VII Corps - The Germany based armored corps which included the 1st Infantry Division (Mechanized); 1st Armored Division; 3rd Armored Division; 1st Armored (British); 1st Cavalry Division; 2nd Cavalry Regiment; and assigned combat support/combat service support units.

XVIII Airborne Corps - The Army's contingency corps, which included the 24th Infantry Division (Mechanized); the 82nd Airborne Division; the 101st Airborne (Air Assault) Division; the 6th Light Armored (French) Division; the 3rd Armored Cavalry Regiment; and assigned combat support/combat service support units.

200th TAMMC - 200th Theater Army Materiel Management Center, based in Germany, missioned to provide theater level materiel management to the European Command and the United States Army, Europe.

800th MMC - 800th Materiel Management Center; assigned to the 2nd COSCOM, and missioned to support VII Corps units.